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ABSTRACT

The basic problem of this study was to develop a method for increasing the efficiency of the instructional process at the introductory level. The experiment compared two methods for doing the outside of class assignments in support of a course in library science instruction. The plan called for the control groups to do the outside assignments in the conventional manner. The experimental groups were to do the outside assignments by attending a learning station. The material available to them at the learning station covered basically the same content area as that available to the control groups. The difference was in the provision of a format which was designed to clarify the organization and interrelationships of the subject matter, and which would accommodate student differences through the provision of several levels or paths. Results of this study led to the following conclusions: the learning station pattern of instruction is highly effective for; (1) bringing a group of students to a guaranteed criterion level with respect to a specified body of knowledge, (2) providing a significant savings of student time for completing the outside of class assignments and (3) creating a more favorable attitude towards the outside of class assignments. (Author/NH)

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FINAL REPORT
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"A SYSTEMS APPROACH TO THE INDIVIDUALIZATION OF LIBRARY SCIENCE INSTRUCTION"

By

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December, 1970

The research reported herein was performed pursuant to a grant with the Office of Education, U.S. Department of Health, Education , and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

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LI 002 956

(A METHOD FOR INCREASING THE EFFICIENCY
OF INSTRUCTION)

Abstract

by

Patricia A. Goheen

The basic problem of this study was to develop a method for increasing the efficiency of the instructional process at the introductory level.

An experimental approach was employed to compare two methods for doing the outside of class assignments in support of a course in library science instruction.

The plan called for the control groups to do the outside of class assignments in the conventional manner: by the reading of assigned articles and books. The experimental groups were to do the outside of class assignments by attending a learning station. The material available to them at the learning station covered basically the same content area as that available to the control groups. The difference was in the provision of a format which was designed to clarify the organization and interrelationships of the subject matter, and which would accomodate student differences through the provision of several levels or paths.

The experimental design which provided the structure for this study was a Solomon Four Group design, modified by the addition of the rotation group method.

The following hypotheses were tested:

Hypothesis I

There is no significant difference in the achievement scores on the experimental test between control and experimental groups.

Hypothesis II

There is no significant difference between the achievement scores for relevant questions on the course, Library Science 500, test between control and experimental groups.

Hypothesis III

There is no significant difference in the time required to complete the outside of class assignments between control and experimental groups.

Hypothesis IV

There is no significant difference in attitudes expressed towards the outside of class assignments between control and experimental groups.

The major statistical test used in the analysis of the data was the Mann-Whitney U. This analysis resulted in the rejection, at the .05 level of significance, of hypotheses I, III, and IV. In connection with hypothesis I, the experimental groups achieved significantly higher scores than did the control groups. In connection with hypothesis III, the experimental groups took significantly less time to complete the outside of class assignments than did the control groups. In connection with hypothesis IV, the experimental groups expressed a significantly more favorable attitude towards the outside of class assignments than did the control groups. There was no significant difference, in connection with hypothesis II, between the experimental and control groups in their achievement scores on the relevant questions on the course, Library Science 500, test.

In light of the results of this study, the following major conclusions seem warranted:

1. The learning station pattern of instruction is highly effective in bringing a group of students to a guaranteed criterion level with respect to a specified body of knowledge.
2. The learning station pattern of instruction for completing the outside of class assignments provides a significant savings of student time, as compared to the conventional pattern.
3. The learning station pattern of instruction is conducive to the creation of a more favorable attitude , on the part of the students, towards the outside of class assignments in support of a course.

CHAPTER I

INTRODUCTION

THE BASIC PROBLEM OF THE STUDY

The basic problem of the study was to develop a method for increasing the efficiency of the instructional process at the introductory level.

The particular focus of the above problem was that of an introductory segment of instruction in the library science curriculum at the Master of Science level. Specifically, the segment consisted of the reading assignments and homework exercises in support of seven cataloging and classification lectures in an introductory course: Library Science 500, Foundations of Library Science, at Case Western Reserve University.

There is an urgent need for increased efficiency in instruction at all levels, particularly at the introductory one. This situation is a product of the pressures to add additional subject matter to existing programs without, at the same time, making provision for a corresponding increase in time allotment.

The discipline of library science, like most others, in addition to the normal processes of refining and expanding its original areas of interest, has witnessed almost a doubling of content within the last decade. A further complication, for library science , of this situation has been the telescoping, through the years, of curricular content into a one year program.

FACTORS INFLUENCING THE DESIGN OF THE STUDY

The primary factor exhibiting an influence upon the design of this study was a desire to exploit the conditions of economy in the design and implementation of the instructional process. A second factor, actually a subset of the economy factor , was a desire to provide for accomodation of individual student differences.

The desire to create a condition of economy takes expression in several different ways:

Economy in the Preparation and Administration of the Instructional Sequence

Since this study was aimed at an introductory level within the curriculum, it follows that a successful demonstration of this ability must be one that has been carried out with a minimum of cost to the institution.

Among the considerations involved in a minimum cost to the institution would be such factors as: Personnel

expertise needed for the design of the project should be limited to that available within the institutional environment. A minimum amount of expenditure, in terms of equipment and preparation costs, should accrue to the institution. A minimum amount of institutional manpower should be needed to administer the project upon implementation.

A More Economical Instructional Situation Should Accrue to the Institution as a Result of the Implementation of the Study

One of the major responsibilities of this study, and perhaps the ultimate determinant of its success,will lie in its ability to exhibit and validate a more economical pattern of instruction. This increased economy might consist of an increase in cognitive knowledge gained; a decrease in time needed to gain a body of knowledge; or a combination of the above two factors.

A More Economical Learning Situation Should Accrue to the Student as a Result of the Study

This study will involve itself in a consideration of the type of learning environment most conducive to a rapid and comprehensive mastery of the subject content by the student. A major consideration in this step, as well as in the preceding steps, will be an attempt to make maximum utilization of the resources of self management and responsibility which the mature graduate student is able to bring to the educational process. Utilization will also be made of any existing, relevant, knowledge base which the experienced student might bring to the program.

CONSIDERATION OF ESTABLISHED EDUCATIONAL TECHNIQUES AS A SOLUTION TO THE PROBLEM

An analysis of the literature of educational technology discloses the utilization of three major processes in support of its theoretical base. These are programmed instruction, computer assisted instruction and the use of a systems approach to curricular and instructional design.

All of these technologies have proved deficient, to some degree, in producing the needed educational reforms.

ALTERNATIVE SOLUTIONS WHICH FORM THE BASIS OF THIS STUDY

The primary reasons for rejecting programmed instruction and computer assisted instruction as viable processes for the purposes of this study were the extensive requirements, in terms of time and effort needed, for the design

of the software components. In the case of computer assisted instruction, the extensive equipment costs needed for implementation were considered prohibitive.

A search of the literature, in the area of educational technology, revealed the existence of two techniques which appeared to be compatible with the purposes of this study.

Clarification, to the Student, of Course Objectives

The findings reported in a number of studies indicate that the instructional process can be made substantially more efficient through the relatively simple mechanism of clarifying, for the student, the course objectives he will be required to master.

Several different factors contribute to this increased efficiency. The instructor , designing the course, is required to discipline and clarify his own thinking regarding the relationship and progression of the course content before he can prepare meaningful statements of objectives for the student.

The student knows exactly what he will be expected to master as a result of having taken the course of instruction. No time is wasted in guessing as to what the instructor really considers important. Vital segments of content cannot be overlooked by the student.

The student is able to assess his incoming knowledge base with respect to the course objectives and make a decision as to that quantity of information he must acquire in order to enable him to demonstrate mastery of the objectives. He need not waste time on already mastered objectives.

Adjunct Programming

Adjunct programming, the second technique utilized in this study, is actually an extension and implementing device for the concept of clarification of course objectives.

An adjunct program is basically a series of objectives in question form. The questions are given to the student and direct his attention to the key points in the content of an already existing body of knowledge, such as a textbook or a syllabus.

The main difference between conventional programmed instruction and adjunct programming is to be found in the form of content presentation. In adjunct programming, the student is referred to outside references for the content of the program, while in programmed instruction the content is constructed and included within the program itself.

The major advantages, for the purposes of this study, in using adjunct programming in place of conventional programmed instruction lie in the economy of time, money and personnel expertise needed for the construction of this type of program. A second attractive feature of adjunct programming, with respect to the purposes of this

study, is the emphasis it places on student initiative and personal responsibility for the management of the analysis and acquisition phases of the instructional process.

TREATMENT PLANNED IN IMPLEMENTING THE CONCEPTS OF THE STUDY

The content of the reading assignments and homework exercises, used as the focus for this study, was analyzed. The resulting structure was displayed through a series of flow charts designed to show its progression and the interrelationships between parts.

The flow charts were accompanied by checklists, composed of questions illustrating the major points on the flow charts. The points, on the flow charts, and the accompanying questions define, for the student, the essential content to be mastered.

Each question, in the checklists, is followed by a space in which the student may write his answer. The flow charts and checklists become the property of the student and form a notebook of basic data in support of the lecture.

Accompanying each question are two sets of page citations, informing the student where the correct answers to the questions may be verified. One citation leads to a concise statement of the answer, usually presented in two or three sentences. The second citation leads to a full descriptive answer to the question, often accompanied by diagrams and illustrations. The concise,or lean answer, is available to the student in either a slide presentation or on printed pages contained in a small notebook. The full, descriptive answer is presented in a syllabus format.

The student is requested to make an assessment of his own knowledge base with respect to this required content. He does this by checking himself against each question. If he is very familiar with the area covered by the question, he may merely verify the correctness of his thinking by looking at the shorter form of the answer, not even bothering to record an answer in the checklist.

At a less familiar level, he may wish to write in an answer as an aid to organization and review. In a case where the student feels real uncertainty, with respect to the question area, he may turn to the second reference, given with each question, and gain clarification through the full discussion presented there.

The students were free to use any combination of study patterns they chose. They could follow a lean route or a full route exclusively, depending on their needs, or they

could intermix the two. For example, a student could economize his time by using a lean route, branching to the full route only when necessary.

The checklist questions act as definers of the course objectives and as adjuncts to the instructional content. The answers to these questions form the cognitive content of the course of instruction.

MAJOR QUESTIONS TO BE ANSWERED

The major questions to be answered, as a result of this study, center around a comparison of experimental and control groups with respect to the following dependent variables:

1. The level of information achievement.
2. The amount of time needed to complete the outside of class assignments in support of the course.
3. The attitude, on the part of all students, towards the outside of class assignments in the course. The attitude, on the part of those using the experimental method, towards that method of studying and learning.

DEFINITIONS OF TERMS AS THEY ARE USED IN THIS STUDY

O.C.A.

The outside of class assignments, as carried out by the students in support of the seven lectures under consideration in this study.

Learning Station

A physical location wherein are contained the necessary materials with which the experimental groups, in this study, are able to complete the O.C.A. requirements for the seven lectures in cataloging and classification. The students have in their possession flow charts presenting an overview of course content, plus a series of checklists in supplement of these flow charts. The verification of answers to these questions is contained in materials located at the larning station.

Flow Charts

A series of charts containing the main points of the content in support of the lectures. The flow charts are organized to represent the logical structure and important interrelationships of this content. At each point on the flow chart, coordinate checklist page numbers are given; thus the flow charts serve as an index to the checklists.

Checklists

A series of questions designed to provide emphasis and

illustration for the points outlined on the flow charts. Space is provided, after every question, for the student to record his answer to the question. Verification of this answer is available to the student in two forms: a lean answer and a full answer. Page citations direct the student to these verifications.

Lean Answer

The verification of the correct answer to a question in the checklist, presented in a concise statement, usually one or two sentences. The format of the lean answer may be:

Packet

A packet is a small notebook containing the answer to each question on a separate page.

Slide

A slide presented via an individually controlled slide projector. The content of the packet and the slide is identical.

Full Answer

The verification of the correct answer, to a question in the checklist , presented in a full, explanatory mode. This answer may consist of several pages of explanation, and is often accompanied by illustrations and diagrams.

Syllabi

The full answers are presented in syllabi; cohesive units of knowledge much like chapters in a well organized book.

ORGANIZATION OF THE STUDY

The Experimental Design

The experimental design which provided the structure for this study is an extension of the Solomon Four Group Design. The strength of this research design was one of the important factors in this study.

The four groups were chosen by a process of random selection. Additional measures were taken to test for the equality of the groups.

The control groups did the O.C.A., in support of the seven lectures in the conventional manner: i.e. assigned readings and exercises. The experimental groups attended the learning station in lieu of doing the conventional O.C.A.

Control group I and experimental group II received a pretest. All groups received a post test after the first three lectures, and again after the last four lectures.

Evaluative Instruments Used

The following evaluative instruments were administered:

1. An experimental test designed to test the course content presented at the Knowledge level, the first level of Bloom's Taxonomy of Educational Objectives (Bloom, 1956).

2. Relevant questions from the course, Library Science 500, examination.

3. An attitude measure of the homework in support of the course.

4. An attitude measure of the experience of having used the learning station.

5. A measure of the time needed to do both types of homework.

The experiment was executed the first time in the Summer of 1969 and repeated again in the Fall of 1970. The number for the first experiment was 104; for the second it was 37.

SUMMARY OF RELATED LITERATURE

A survey of the related literature indicates the following conditions with respect to this study:

1. A set of problems does exist which hampers the potential effectiveness of library science instruction at the graduate level.

2. Extensive research in support of both programmed instruction and computer assisted instruction has been undertaken. Both programmed instruction and computer assisted instruction exist as viable methods of instruction. At the present time, computer assisted instruction is limited by the equipment cost and personnel expertise needed to conduct this type of research. Programmed instruction is also expensive in terms of developmental time. This time might be better justified if this stage is viewed also as a pre planning stage for the creation of software for computer assisted instruction.

3. There is evidence, in the literature of educational technology, of a growing discontent with the more traditional and formalized techniques of programmed instruction. This discontent has given rise to a number of alternative suggestions which emphasize the factors of simplicity and economy in the instructional process.

4. Little research has been conducted in recent years in connection with library science education. Several researchers have investigated the process of teaching the use of library facilities to the undergraduate and graduate college student. Of the research conducted in library schools, the bulk of the experiments have been concerned with testing the effectiveness of programmed instruction as a teaching device, compared to attendance at a lecture. Achievement scores have been the major area of comparaative interest.

CHAPTER II

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

INTRODUCTION

The purpose of this study was to ascertain, experimentally, the effects of increasing the level of logistical support for a course in library science instruction.

THE EXPERIMENTAL DESIGN

A Solomon Four Group design, modified by the addition of the rotation group method, was used in this study. The pattern for this design is:

I	II	III	IV
R	R	R	R
P	P		
C	X	C	X
O_1	O_1	O_1	O_1
C	X	X	C
O_2	O_2	O_2	O_2

R-- represents the random selection of groups.
P-- represents a pretest.
C-- represents a control group.
X-- represents an experimental group.
O_1-- represents the posttest administered after the first three lectures in the course.
O_2-- represents the posttest administered after the last four lectures in the course.

The first part of the design, up to and including O_1, is the basic Solomon Four Group design. The second half of the experiment-- in which group III changes from a control to an experimental group, and group IV changes from an experimental to a control group--evidences the application of the rotation-group method.

POPULATION AND REPLICATION OF THE STUDY

The students involved in this study were entering students into the Master's program in the School of Library Science at Case Western Reserve University. The first study was conducted with students entering the program in the Summer of 1969. The combined number for these groups was 104.

The study was repeated a second time with students

entering the program in the Fall class of 1969. The combined number for these groups was 37.

PROCEDURES OF THE STUDY

The control groups completed the O.C.A. in the manner traditional to the course by the reading of required and suggested assignments in periodicals and books which were on reserve in the library school.

The experimental groups completed the O.C.A. by attending the learning station at which they completed the checklists and verified their answers.

Control Groups I and V and experimental groups II and VI took a pretest before the beginning of the lectures treated as the focus of this study.

All groups took a posttest after the first three lectures, the point at which the rotation groups switched patterns, and again after the last four lectures.

All groups completed an attitude survey expressing their feelings toward the O.C.A. in support of the cataloging and classification lectures in the course.

The experimental groups completed a survey expressing their attitude towards the learning station method of study.

SUMMARY OF THE RESULTS OF THE STUDY

A summary of the results of the study is shown in Tables 4:1- 4:7.

Hypotheses

The data in these tables was used to determine the acceptance or rejection of the following null hypotheses:

Hypothesis I

There is no significant difference between the achievement scores, on the experimental test, between control and experimental groups.

Finding

It was found that the students in the experimental groups achieved significantly higher scores at the .05 level on the experimental test than did the control groups.

Hypothesis II

There is no significant difference between the achievement scores on relevant questions on the course, Library Science 500, test between control and experimental groups.

Finding

It was found that experimental and control groups did not differ significantly at the .05 level in their achieve-

ment scores on the relevant course, Library Science 500, test questions.

Hypothesis III

There is no significant difference in the time required to complete the O.C.A. between control and experimental groups.

Finding

It was found that experimental groups took significantly less time at the .05 level to complete the O.C.A.

Hypothesis IV

There is no significant difference in attitudes expressed towards O.C.A. between control and experimental groups.

Finding

It was found that the experimental groups had a significantly more favorable attitude at the .05 level towards the O.C.A. than did the control groups.

Questionnaire

The mean scores of the students who filled out a questionnaire evaluating the learning station indicated a favorable response towards this type of instruction.

The Media Used at the Learning Station

An analysis of the records kept, as to the patterns of media used by the experimental groups at the learning station, indicates that they preferred the packets over the slide presentation. These packets were used because the students preferred them and not because of the unavailability of slides. The syllabi were used with a frequency of almost 50 percent.

CONCLUSIONS

In order to gain as much generalizability as possible from this study, use was made of a nonparametric statistical test in analysis of the data. Further replication of this study will be required to establish the limits of the generalizability of these results. Based on the samples used in this study, the following conclusions seem warranted:

1. The learning station pattern of instruction is highly effective in bringing a group of students to a guaranteed criterion level with respect to a specified body of knowledge.

2. In situations where students are asked to generalize from a knowledge base acquired from O.C.A. to the type of questions asked on a course examination, this form of learning is equally as effective as the conventional pattern, with a savings of almost half the time.

3. The learning station pattern of instruction for completing the O.C.A. provides a significant savings of student time, as compared to the conventional pattern.

4. The learning station pattern of instruction is conducive to the creation of a more favorable attitude, on the part of the students, towards the O.C.A. in support of a course.

5. Students express a favorable attitude towards this type of learning experience.

6. Students prefer an instructional message presented by means of the printed word to one presented by means of a slide.

DISCUSSION

Procedural Activities of the Study.

The execution of a study which operates with small sample sizes and within the constraints of a larger operational situation highlights the value of utilizing a strong research design as was done in this case. The cross checks provided by the replicating and rotating groups provided strong proof of experimental outcomes in the face of the potential existence of unidentifiable extraneous independent variables.

The data from the two by two analysis of variance of the posttest scores for the experimental test indicates that no significant effect could be attributed as a result of taking a pretest, nor was there any significant effect resulting from a combination of pretest and experimental factor, i.e. the learning station.

The strength of this design is further highlighted by the fact that even though Group VI,one of the experimental groups in the Fall class, had to be eliminated from the analysis of results because of their significantly higher scores on the pretest, it was still possible to make an analysis of the data for this part of the study by use of the three remaining groups.

Replication of the results of the study was achieved by the fact that the direction of the achievement of the students in the second study patterned those in the first study even though the results were not evidenced at the significance level set by this study. In light of the fact that in several cases only one point less in a

tabulation would have produced a significant difference for this second study, it is felt that the small number of students available for the second study had a limiting effect on the results.

The results of the two by two analysis of variance, a more powerful parametric test, indicate that all experimental groups did significantly better in achievement scores on the experimental test than did the control groups.

One may speculate as to why there was no significant difference between the experimental and control groups on the relevant course examination questions.

Course Examination, Essay Questions

The experimental and control groups achieved approximately equivalent scores on the essay questions on the course examination. I think that the reason the experimental groups did not exceed the control groups in achievement scores is due to the level of learning which had been built into the learning station pattern of instruction. The learning situation as it was designed for the experimental groups was limited to Bloom's first level of cognitive knowledge and Gagne's first six types of learning conditions. These parameters did not extend to principle learning or problem solving, capabilities which might have affected the answering of the essay questions. The fact that the experimental students achievement scores were comparable to those in the control groups indicates that the learning station pattern of instruction was as effective in providing the proper prerequisite learning states needed for those higher expressions of learning achievement.

Course Examination, Short Answer Questions

The experimental and control groups achieved approximately equivalent scores on the short answer questions on the course examination. The author hypothesizes that the number of questions presented--seven on the Summer examination and five on the Fall examination--was not large enough to form a discriminatory sample with respect to the total body of information presented in the O.C.A.

RECOMMENDATIONS

Based upon the results of this study, the following recommendations are suggested:

1. If it is desirable that a body of specified knowledge be mastered to a criterion level, the learning station pattern of learning gives a high degree of control over the learning process, both in terms of achievement levels and time allotment necessary.

2. When faced by conditions of an overcrowded curriculum, the time saved by the learning station pattern

of learning can be utilized for adding some new increment to the existing curriculum.

3. When faced by conditions of time stress, such as are found in the typical Summer School session, this pattern of instruction enables an equivalent amount of learning to occur in almost half the amount of time.

4. When it is felt desirable to improve the student's attitude towards the O.C.A. in support of a course, the learning station pattern of learning is found to produce attitudes significantly more favorable than the conventional form of doing these assignments.

SUGGESTIONS FOR FURTHER STUDY

1. In line with a systems approach to instructional design, an analysis should be made of the questions on the experimental test to determine which ones had a higher frequency of misses than is allowed by the criterion statement of the system. The instructional sequence in support of these questions should then be modified or increased in an attempt to raise the course teaching level to that indicated by the criterion statement.

2. The learning station pattern of instruction has been shown in this study to produce a high level of learning for a basic body of knowledge. Limiting the student soley to this type of instruction does deny him, however, to some degree, contact with the writings of the major authors contributing to the literature of the discipline. It is recommended, therefore, that a further study be undertaken to determine the optimum mixture pattern for providing a combination of learning station assignments and readings considered to be important to the student's enrichment.

3. One of the questions which has been long debated with respect to traditional programmed instruction is whether or not an active response, on the part of the student, is needed for learning to be effective. This question might prove a fruitful one for further research in connection with the experimental base provided in this study. Specifically, the hypothesis is proposed that a student, provided with checklists which contain the answers already filled in, might learn the course objectives to an equal level of achievement and in less time than was necessary when the student was required to fill in his own answer.

4. This study was primarily concerned with efficiency and economy in terms of achievement levels and time needed to complete the assignments. Little concern

was given to the cost factor in this study. It is suggested that a cost analysis of the preparation and management of this type of instruction be conducted.

Table 4:1

Means, Experimental Test Groups 1-4

Possible right first half: 51

Possible right second half: 44

	C 1	X 2	R 3	R 4
Pretest 1st. half	11.23	9.87		
Posttest 1st. half	31.91	39.88	33.25	36.72
Pretest 2nd. half	10.65	10.22		
Posttest 2nd. half	27.97	32.62	34.57	25.64
Pretest total	21.87	20.08		
Posttest total	59.52	73.24	68.60	62.10

C denotes control group

X denotes experimental group

R denotes rotation group

Table 4:2

Means, Experimental Test Groups 5-8

Possible right first half: 51

Possible right second half: 44

	C 1	X 2	R 3	R 4
Pretest 1st. half	10.46	17.89		
Posttest 1st. half	30.00	39.89	34.67	37.76
Pretest 2nd. half	7.73	12.89		
Posttest 2nd. half	27.82	36.23	34.56	25.50
Pretest total	18.18	30.77		
Posttest total	58.00	76.12	69.73	63.25

C denotes control group

X denotes experimental group

R denotes rotation group

Table 4:3

Means, Course Midterm Short Answer
Groups 1-4; 5-8

Possible points 100

C 1	X 2	R 3	R 4
94.5	96.6	95.9	98.1

Possible points 25

C 5	X 6	R 7	R 8
18.3	18.5	17.8	19.1

C denotes control group

X denotes experimental group

R denotes rotation group

Table 4:4

Means, Course Essay Answer Groups 1-4; 5-8

Possible points 100

C 1	X 2	R 3	R 4
92.8	92.0	92.4	92.8

Possible points 100

C 5	X 6	R 7	R 8
83.3	80.6	91.6	80.0

C denotes control group

X denotes experimental group

R denotes rotation group

Table 4:5

Mean Time in Minutes Needed to Complete
O.C.A., Groups 1-4; 5-8

	C 1	X 2	R 3	R 4
1st. half	663.75	267.04	624.50	250.09
2nd. half	608.21	326.91	297.29	557.63
Total	1271.96	593.95	921.79	807.72

	C 5	X 6	R 7	R 8
1st. half	526.36	259.00	541.66	260.00
2nd. half	577.18	332.00	348.77	468.75
Total	1103.54	591.00	890.44	728.75

C denotes control group

X denotes experimental group

R denotes rotation group

Table 4:6

Mean Scores Attitude O.C.A.

C 1	X 2	RC 3	RX 3	RC 4	RX 4
27.06	33.54	27.29	34.37	27.80	31.75

C 5	X 6	RC 7	RX 7	RC 8	RX 8
29.32	34.12	24.55	36.11	26.12	33.87

C denotes control group

X denotes experimental group

RC denotes rotation group answering as control group

RX denotes rotation group answering as experimental group

Table 4:7

Percent of Time Each Form of Media Used

Packets

	X	R
	75.92 %	64.46 %
Because slides being used	6.39 %	6.43 %
Because preferred packets	69.03 %	58.01 %

Slides

X	R
20.28 %	29.82 %

Syllabi

X	R
47.81 %	50.18 %

X denotes experimental group

R denotes rotation group

APPENDIX A

EXAMPLES OF INSTRUCTIONAL MATERIALS USED BY STUDENTS ATTENDING THE LEARNING STATION TO COMPLETE THE O.C.A.

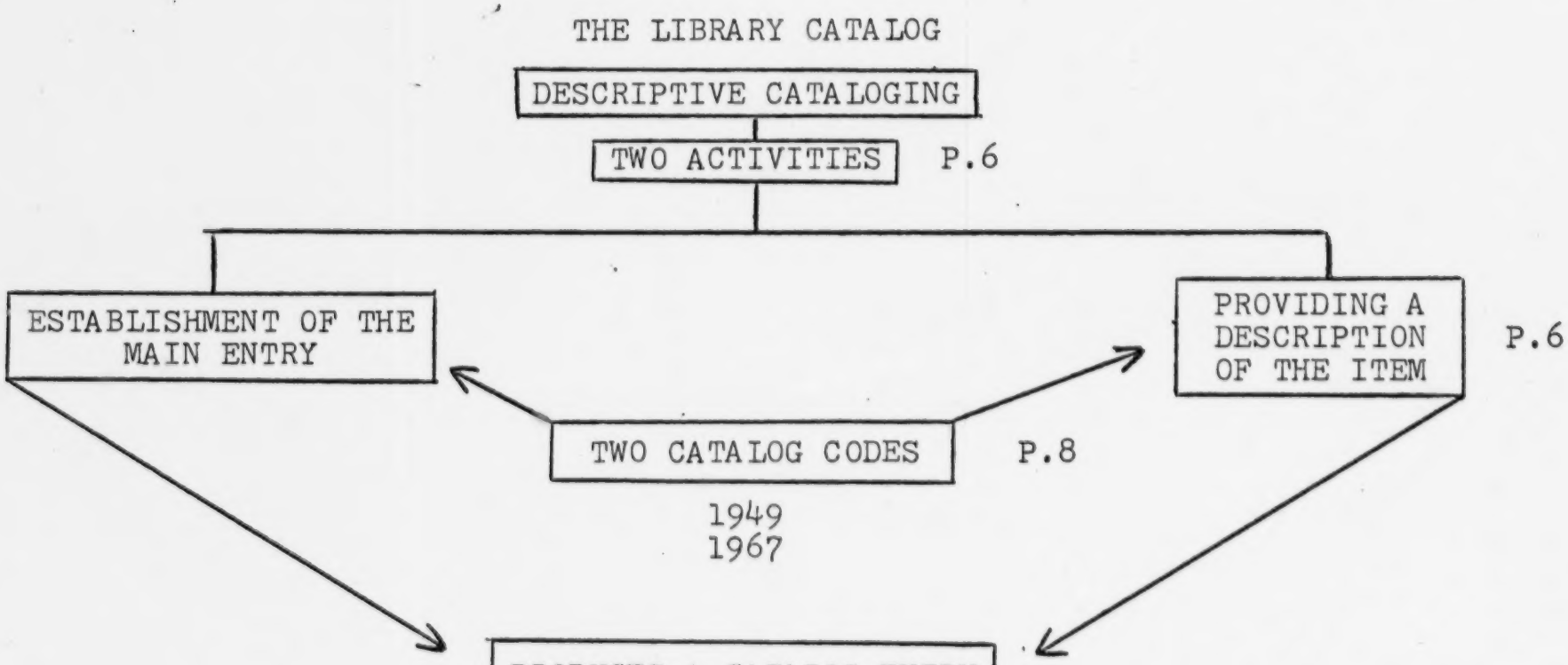
Flow Chart

Check List

Lean Answer Mode

Full Answer Mode

FLOW CHART



CONCEPTS OF:

UNIT CARD	P.10
MAIN ENTRY	P.10
HEADING	P.10
ADDED ENTRY	P.10

CHECK LIST

THE CATALOG ENTRY, THE LIBRARY CATALOG-CHECKLIST

8. Descriptive cataloging involves two major activities: SLIDE 8 PAGE 8

9. List three considerations within the descriptive process: SLIDE 9 PAGES 9-10

LEAN ANSWER MODE

SLIDE 8

8.

1. The establishment of the main entry for the item.
   Part I of the Anglo-American Cataloging Rules.

2. Providing a description of the item.
   Part II of the Anglo-American Cataloging Rules.

SLIDE 9

9.

1. The description must be precise.
2. The description must be adequate.
3. The description must be economical.

FULL ANSWER MODE

THE LIBRARY CATALOG: DESCRIPTIVE CATALOGING

DESCRIPTIVE CATALOGING INVOLVES TWO MAJOR ACTIVITIES

1. The establishment of the main entry for the item.
   Governed by Part I of the Anglo-American Cataloging Rules.

2. Providing a description of the item.
   Governed by Part II of the Anglo-American Cataloging Rules.

1. THE ESTABLISHMENT OF THE MAIN ENTRY FOR THE ITEM

The purpose of the main entry is to provide a standard mode of identification by which the work may be distinguished and referred to.

In modern cataloging practice, the first preference for this standard mode of identification is the author's name.

At this time you should read pages 9 and 10 of the Anglo-American Cataloging Rules (AACR) and thumb briefly through pages 11-186. Do not attempt to memorize these rules, you should only be aware of what the first part of this book covers.

2. PROVIDING A DESCRIPTION OF THE ITEM

Page 189 of the Anglo-American Cataloging Rules states that one objective of descriptive cataloging is to

state the significant features of an item with the purpose of distinguishing it from other items. . .

There are three points to be considered within this activity:

1. The description must be precise.
The person looking for a specific publication must be given the information which will identify a book as a unique and distinguishable item within the collection. We call this a known item search because the person is seeking a specific author or title.

2. The description must be adequate.
The person looking for information on a subject must be given enough description to enable him to make a choice among alternatives. We call this an unknown item search because the person does not have a specific author or title in mind when he begins his search.

3. The description must be economical.
The patron must be provided with a relatively simple catalog entry, one free from unnecessary information.

There will inevitably be a conflict between the desire to provide an ample description and the need for economy.

THE LIBRARY CATALOG: DESCRIPTIVE CATALOGING

At this time you should read pages 189-190 of AACR and thumb briefly through the rest of the book. Do not attempt to memorize these rules; you should only be aware of what the second half of this book covers.

SUMMARY: DESCRIPTIVE CATALOGING INVOLVES TWO MAJOR ACTIVITIES:

1. Establishment of the main entry.
2. Providing a description of the item.

SUMMARY: THREE POINTS TO BE CONSIDERED WITHIN THE DESCRIPTIVE PROCESS:

1. The description must be precise.
2. The description must be adequate.
3. The description must be economical.

APPENDIX B

O.C.A. READING ASSIGNMENTS AS PRESENTED TO THE CONTROL GROUPS

Unit III-B Miss Kaltenbach

Required Readings: Read two

Clapp, V. W. "The role of bibliographic organization in contemporary civilization." in Bibliographic organization. ed. by J. H. Shera. 1951. pp. 3-23, UL res. LS 010.1 S55

Egan, M. E. & Shera, J. H. "Foundations of a theory of bibliography." Library Quarterly 22:125-137, April 1952. Also in Shera, H. H. Libraries and the organization of knowledge. 1965. pp. 18-33, UL res. LS 020.4 S55S

Murra, K. O. "History of some attempts to organize bibliography internationally." in Shera, J. H. ed. Bibliographic organization. 1951. pp. 24-53. UL res. LS 010.1 S55

Schneider, G. Theory and history of bibliography. 1954. Part II. "Nature of bibliography." UL res. LS 010 S35T

Unit III-C

Required Readings: Read three

Butler, Pierce. "Bibliographic function of the library." Journal of Cataloging and Classification 9:3-11, March 1953. Also in Marshall, J. D. Books, libraries, librarians. 1955. p. 241-253. UL res. LS 020.4 M36

Dubester, H. J. "The catalog--a finding list?" College and Research Libraries 18:107-11, 159, March 1957. Bound copies in LS and UL.

Lubetsky, S. "The function of the catalog." College and Research Libraries 17:213-5, May 1956. Bound copies in LS and UL.

Strout, R. F. "The development of the catalog and cataloging codes." Library Quarterly 26:254-275, Oct. 1956. Also in Strout, R. F. Toward a better cataloging code. 1957. p. 3-25. UL res. LS 025.3 S92

Weber, D. C. "The changing character of the catalog in America." Library Quarterly 34:20-33, January 1964.

SCHOOL OF LIBRARY SCIENCE, C.W.R.U. LS 500

Unit III-D Miss Kaltenbach

Required Readings:

Anglo-American cataloging rules. 1967. pp. i-ii; 70-72; 189-192. LS R025.32 A589

Examine the relevant chapters in one of the following:

Akers, S. G. Simple library cataloging. 1954. UL res. LS 025.31 A31A2

Mann, Margaret. Introduction to cataloging and the classification of books. 1943. UL res. LS 025.3 M28A

Piercy, Esther. Commonsense cataloging. 1965. UL res. LS 025.31 P61

Wynar, B. S. Introduction to cataloging and classification. 1967. UL res. LS 025.3 W98

Unit III-E

Required Readings: Read two

Palmer, B. I. "Classification as a foundation study for librarians." in Classification Research Group. Sayers memorial volume. 1961. pp. 202-215. UL res. LS 025.4 C61

Shera, J. H. "Classification: current functions and applications." in Columbia Univ. . . . Subject analysis of library materials. 1953. pp. 29-42. UL res. LS 025.33 C72

Shera, J. H. "Classification as the basis of bibliographic organization." in his Bibliographic organization. 1951. pp. 79-93. UL res. LS 010.1 S55

(The above two articles by Shera are also in his Libraries and the organization of knowledge. 1965. UL res. LS 020.4 S55a)

APPENDIX C

EVALUATIVE INSTRUMENTS

Experimental Test

Evaluation of O.C.A. in Support of Cataloging and Classification Lectures

Evaluation of Learning Station

Relevant Questions From Library Science 500 Course Examination

EXPERIMENTAL TEST

CATALOGING AND CLASSIFICATION: L.S. 500

Your answers, in most cases, should consist of one or two words, or very brief sentences.

1. Which of these two items always has a location factor?

   bibliography _____

   catalog _____

2. List three items which might be used as an added entry.

3. A catalog listing the holdings of a library system, e.g. of a library and all of its branches or affiliates is called:

   _____

4. The listing or record on the unit card of all the additional headings under which the work is represented in the catalog is called:

   _____

5. The name given to that part of the catalog entry which shows the place and date of publication, and the name of the publisher is called:

   _____

6. That part of the catalog entry which determines its filing order is called:

   _____

7. In a fixed location, the books are located with relation to a specific shelf in the library. How are they located in a relative location?

8. A record of the books in a library, arranged in the order in which they stand on the shelves, is called:

_____

9. Name another source for obtaining printed catalog cards in addition to The Library of Congress:

_____

10. Label each of the following definitions as either:

historical bibliography
enumerative bibliography

A. Interested in the book as a physical object:

ink, watermarks, typography, etc. _____

_____

B. More concerned with what the book is about, the

content of the book. _____

11. What information might be placed on the shelf list card in addition to the regular unit card information?

12. A basic catalog card, in the form of a main entry which, when duplicated, may be used as a master for all other entries for that work in the catalog, by the addition of appropriate headings is called:

_____

13. List three factors which affect the quality of bibliographic control within a discipline:

14. List three publications which contribute to the bibliographical control process in the U. S.

15. List two major <u>types</u> of items which form the structure of the library catalog:

_____

_____

16. List three different types of main entry which might appear in the library catalog:

_____

_____

_____

17. What is the term applied to a set of rules governing the composition of the catalog entry, and its filing order in the library catalog:

_____

18. The part of the catalog entry giving the physical description of a work, including such information as paging, numbering of volumes, illustrations and size is called:

_____

19. A book or other item which is published without the name of the author appearing in the book itself is termed:

_____

20. A direction, in a catalog, from a term or name under which no entries are listed to a term or name under which entries are listed is called:

_____

21. The _____ catalog combines into one alphabetical arrangement all of the entries in the catalog.

A _____ catalog is arranged according to some classification scheme.

A _____ is separated into one or more parts on some basis of content or use.

22. List three types of catalogs, as distinguished by the physical form in which they appear.

_____

_____

_____

23. List three types of catalogs as distinguished by their purpose or use.

_____

_____

_____

24. List three types of filing patterns which might be used to arrange terms in alphabetical order.

_____ _____

_____

25. The number, which may be composed of letters, numbers, and/or symbols, used to identify and locate a book or other library item is called:

_____

26. The term given a fictitious name assumed by an author to conceal his identity is called:

_____

27. Library areas where books are shelved which are not open to the public are called:

_____

28. That part of the catalog card which lists the separate parts, works, or pieces included within a collective work is called:

_____

29. The term used to indicate a record or listing of a book or item in a catalog is called:

_____

30. List three types of cataloging aids available from The Library of Congress:

31. The two main classification schemes used in the U. S. today are:

_____

_____

32. List two important steps in the process of classifying?

_____

_____

33. Name the two standard lists of subject headings used predominantly in American libraries:

_____

_____

34. Give the name of a hierarchical classification scheme:

_____

35. A standard subdivision is listed in a subject heading guide as HISTORY AND CRITICISM.

You are cataloging a book which is just about the history of a subject. You use just the term HISTORY for a subdivision.

This is correct _____

This is not correct _____

36. Give the name of a synthetic or faceted classification scheme:

_____

37. Which classification scheme would you associate with these terms?

PMEST, or Personality, Matter, Energy, Space, Time.

_____

THIS IS A SAMPLE PAGE FROM SEARS LIST OF SUBJECT HEADINGS

1 ————Teachers-Practice teaching. See student teaching.
(this is written in light face type)

2 ————Teachers-Training
(this is written in bold face type)

3 ——————Use for works dealing with the history and methods of training teachers, including the educational function of teachers colleges.

4 ——————See also Student teaching; Teachers colleges

5 —————— X Teacher education

6 ——————XX Teachers colleges

---

38. Item no. 1 "Teachers-Practice teaching" is a term which may / may not / be used as a heading in the catalog?

_____

39. Item no. 2 "Teachers-Training" is a term which may / may not / be used as a heading in the catalog?

_____

40. What is item no. 3 called?

_____

41. What does the cataloger do with the items under no. 4?

42. Fill this in to show the card which would appear in the library catalog as a result of item no. 5.

43. Fill this in to show the card which would appear in the library catalog as a result of item no. 6.

44. Locate the index(es) to the L.C. classification scheme:

45. Label each of these classification numbers as either D.D.C.; L.C.; or Colon:

BF 728 _____

F 47: 12. 56'F 2 _____

301.25 _____

46. A pure notation consists of:

A mixed notation consists of:

47. A reference in the library catalog connecting two related headings at the same level of generality is called:

_____

48. Instead of being based on a hierarchical system, these schemes consist of a number of auxiliary tables, coupled with a series of signs and symbols which may be combined to create a very expressive notation.

Name two classification schemes which follow this pattern:

_____

_____

49. A mnemonic device is one designed to assist:

_____

50. What are two ways of composing or building a number in D.D.C.?

51. The Table of Standard Subdivisions is found in the _____ volume of D.D.C.

52. A shelf list can show _____ location(s) for each book listed.
(how many)

A classified catalog can show _____ location(s) for each book listed.
(how many)

53. Label each number as an example of either broad classification or close classification:

    321.4792 _____

    321 _____

54. The D.D.C. consists of two volumes. Name these two volumes:

    _____

    _____

55. These instructions appear in a subject heading list:
    MUSIC (indirect)

    The cataloger makes this subject heading for the catalog:

    MUSIC-SWITZERIAND-ZURICH

    This is correct _____

    This is not correct _____

56. List three grammatical formats in which a subject heading might be written:

57. What do we mean by a controlled language (in connection with subject headings)?

58. It is necessary to keep a record of the headings that have actually been used in the catalog. List two forms in which this authority record might be kept.

59. A classified catalog must be accompanied by:

_____

60. A reference, in the library catalog, leading from a heading at a general level to a related heading at a more specific level is called:

_____

THANKS!

EVALUATION OF O.C.A. IN SUPPORT OF CATALOGING
AND CIASSIFICATION LECTURES IN
LIBRARY SCIENCE 500

These are questions designed to obtain your evaluation of the outside of class assignments in support of the CATALOGING AND CLASSIFICATION LECTURES in L.S. 500.

Follow the same procedure in answering as you did for the previous set of questions: i.e. using the words on either side as directional guides, indicate by placing an X in one of the 7 slots, the direction and intensity of your response.

If you were in a group which had either all learning station sessions, or all conventional assignments, fill in the appropriate line.

If you were in a group which experienced a combination of the two, please fill in both lines.

Remember these questions are only in connection with the CATALOGING AND CLASSIFICATION LECTURES.

1. How often did the outside of class assignments help you to understand better what was said in class?

	seldom						often
conventional	___	___	___	___	___	___	___
learning station	___	___	___	___	___	___	___

2. How often were the materials available which you needed to complete the assignments?

	seldom						often
conventional	___	___	___	___	___	___	___
learning station	___	___	___	___	___	___	___

3. The time needed to complete the outside of class assignments was:

	reasonable						too long
conventional	___	___	___	___	___	___	___
learning station	___	___	___	___	___	___	___

4. The content of the outside of class assignments was:

	valuable						not valuable
conventional	___	___	___	___	___	___	___
learning station	___	___	___	___	___	___	___

5. How effective were your notes, both from outside assignments and from class in helping you prepare for the examination?

	effective						not effective
conventional	___	___	___	___	___	___	___
learning station	___	___	___	___	___	___	___

6. To what degree do you feel you have mastered the subject matter presented in these seven units?

very little						completely
___	___	___	___	___	___	___

This page is provided so that you may make any additional comments you may feel are pertinent.

EVALUATION OF LEARNING STATION

This is a questionnaire designed to elicit your opinion about various aspects of the learning station which you have been using in support of the cataloging and classification lectures in L.S. 500.

Place a check mark beside the answer which best matches your feeling about the statement.

If the question is placed on a 7 point scale, use the words on either side as directional guides, indicating by placing an X in one of the slots the direction and intensity of your response.

EXAMPLE:

good _X_:___:___:___:___:___:___: bad

extremely good

good ___:___:___:___:___:___:_X_: bad

extremely bad

good ___:___:___:_X_:___:___:___: bad

neutral

1. Have you enjoyed using the learning station?

yes ___:___:___:___:___:___:___: no

2. With regard to the subject matter covered, it was:

too little ___:___:___:___:___:___:___: too much

3. What type of media did you prefer?
(if more than one, rank with number 1 being most preferred)

slides

packets

syllabi

readings

4. Do you feel that this type of learning experience was flexible enough to accommodate the particular background of knowledge and experience which you brought to this course?

yes ___:___:___:___:___:___:___: no

5. The learning station room was:

crowded ___:___:___:___:___:___:___: not crowded

6. Do you feel that this type of outside assignment prepared you for the cataloging and classification questions on the midterm?

adequately ___:___:___:___:___:___:___: not adequately

7. If you were to take another course similar to this, would you:

_____ Prefer to have the outside assignments handled in this manner.

_____ Prefer to have the outside assignments handled in some other manner.

_____ Undecided.

8. Which type of media ~~did~~ you use most?
(if more than one, rank with number 1 being the most used)

slides

packets

syllabi

readings

9. With regard to the subject matter covered, it was:

too simple ___:___:___:___:___:___:___: too difficult

10. How often did you turn to the syllabi for further explanation of a point?

seldom ___:___:___:___:___:___:___: often

11. Were you able to use the flow charts as an index to your notes?

seldom ___:___:___:___:___:___:___: often

12. Do you feel you missed anything by not doing the conventional homework assignments?

_____ yes

_____ no

_____ undecided

13. Do you feel that this type of experience was unrealistic in terms of time commitment necessary on your part?

_____ yes

_____ no

_____ undecided

14. Do you feel you were more alert to certain key points in the lecture as a result of having filled in the checklists?

_____ yes

_____ no

_____ undecided

15. If you belonged to a group which had half learning station and half conventional homework, which experience do you feel was most effective in terms of information learned?

_____ conventional

_____ learning station

_____ undecided

16. Do you feel that this type of outside assignment prepared you for the 60 question cataloging and classification examination?

adequately ___:___:___:___:___:___:___: not adequately

17. Do you feel the flow charts helped you to organize your notebook?

yes ___:___:___:___:___:___:___: no

Please feel free to make any additional comments you may feel are pertinent.

Thanks!

(FROM) LIBRARY SCIENCE 500 : MIDTERM EXAMINATION

Identify:

MARC
CARDS
classified catalog
centralized cataloging
Ptolemy I

7. Identify various forms (physical forms) which library catalogs might take. As a user of the library catalog, which forms would you prefer, and why?

10. Define descriptive cataloging, classification, and subject cataloging, and state briefly how each contributes to access to knowledge in a given library.

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